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ABSTRACT

Presented as a public service in anticipation of the October 1979 White House Conference on Library and Information Services, the eight papers in this booklet call attention to the key issues which the American Society for Information Science (ASIS) believes have developed from proliferating information and for technological advances. Each of the brief papers is intended to serve as a 'launching pad' for further discussion on specific topics: "Information as a National Resource," Joseph Becker; "'Information Literacy'--Awareness of and Access to Information Resources," Alan R. Benenfeld; "Costs and Funding of Libraries and Information Centers," Ralph E. O'Dette; "The Library of Congress and Its Nationwide Cataloging Support Services," Lenore S. Maruyama; "Proprietary Rights Versus the Public's Need for Information and Data Resources Stored in Various Media," Douglas E. Berninger; "The Role of the Private Sector in Serving National Information Needs," Paul Zurkowski; "Benefits of Information Science," Andrew A. Aines; and "Policies to Coordinate Information Resources," Vernon E. Palmour. An article by Esther E. Horne and Gerald J. Sophar provides a brief overview of the papers. (JD)

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EIGHT KEY ISSUES
FOR THE
WHITE HOUSE CONFERENCE
ON LIBRARY
AND INFORMATION SERVICES

PRESENTED BY

American Society for Information Science

IN COOPERATION WITH

John Wiley & Sons, Inc.

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Samuel B. Beatty

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

IR006164

INTRODUCTION

The American Society for Information Science is an educational association composed of colleagues from virtually all sectors of the information field—including librarians, information scientists, administrators, publishers, educators, social and physical scientists, services suppliers, and representatives of various publicly and privately funded information programs. It is the only society in the United States which brings together individuals on an international basis who are concerned with information services, programs, and policies upon which these services depend.

The ASIS Special Interest Group on the Public—Private Interface (SIG/PPI) provides within our society a professional forum for those with a common interest in the interrelationships—cooperation, synergism, competition, conflict—between government and private-sector-funded information activities. Both sectors have applied information technologies that regularly cross political and geographic boundaries. Further, SIG/PPI identifies and supports proper roles for the private and government sectors in the information field, provides a professional overview of this interrelationship and its impact on the discipline of information science and helps evaluate suitable codes of ethics and business practices on a professional individual level.

The ASIS feels it is natural that our SIG/PPI commission a series of papers designed to familiarize the public with the major issues of national concern to the whole information field. The papers and authors were selected under the guidance of our Public Affairs Committee. The authors are experts in their respective topics and have had long active involvement in the information field. With the activity now being pursued in the respective states and territories of the United States in preparation for the White House Conference on Libraries and Information Services, ASIS publishes these papers as a public service in the interest of promoting the formulation of sound information policies and programs for the people of the United States.

We further urge that every delegate, alternate, and observer attending their respective Pre-White House or Governor's Conference on Library and Information Services read and use these papers as background for their formulation of resolutions and recommendations. We likewise hope these papers will be useful to those who go on to be delegates and alternates to the 1979 White House Conference.

It is a pleasure, on behalf of ASIS, to thank our SIG/PPI members and the authors of these papers for doing this work in the interest of the public good.

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FOREWORD

Our perception of things determines to a large extent how we act and react to issues. The membership of the American Society for Information Science would therefore like you to know about eight key issues that should be considered by the delegates to the States and Territorial Conferences on Libraries and Information Services and by those who will participate in the White House Conference in October 1979.

Several of the issue papers call your attention to the areas of conflict between publishers and libraries, caused for the most part by technological advances and economic pressures. Although they are there and must be dealt with, it should be kept in mind that the viability of the private sector publishers and the nation's libraries and information centers is essential to our well-being and that these groups depend on one another for their existence.

I want to thank John Wiley & Sons, Inc. for printing and publishing *Eight Key Issues* free of charge as a contribution to the White House Conference. Two others, who must be thanked, are Robert L. Klassen, Chairman of the ASIS Public Affairs Committee, which identified the eight key issues, and Catherine E. Scott of the same Committee who selected the authors. Robert Klassen is Chief, Program Coordinating Staff, Office of Libraries and Learning Resources, U.S. Office of Education. Catherine Scott is the Librarian at the National Air and Space Museum, Smithsonian Institution. Appreciation is also expressed to ASIS Officers Audrey N. Grosch, President, James M. Cretsos, President-elect, Margaret T. Fischer, Past President, and John E. Creps, Jr., Treasurer; Councilors Marilyn C. Bracken, Ted Brandhorst, Manfred Kochen, Jan Kremar, Margot B. McBurney, Gerard O. Platau, Frank Slater, and Bonnie C. Talmi; Managing Director Samuel B. Beatty and Assistant Managing Director, Robert (Skip) McAfee, Jr.

Gerald J. Sophar

American Society for Information Science

PUBLISHER'S NOTE

The White House Conference and the States and Territorial Conferences on Libraries and Information Services will focus attention on the role, mission, health, and problems of libraries. These deliberations may have a critical influence on the nature and extent of libraries' future contributions to our culture and our scientific and economic progress.

John Wiley & Sons, Inc., has published this brochure in cooperation with the American Society for Information Science as a public service and as a contribution to the success of the conferences. The views expressed are exclusively those of the American Society for Information Science. We are grateful to Dr. Carol Nemeyer, Associate Librarian of Congress for National Programs, for editorial and other assistance.

John Wiley & Sons, Inc.

Overview of the Eight Key Issue Papers

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During the last two decades computers, telecommunications, electrostatic photocopying, and other innovative technologies have altered the way we organize, store, obtain, and disseminate information. In order to familiarize you with these new ways of handling information we have asked eight outstanding professionals to write about key issues that have resulted from proliferating information or technology. First, however, it is necessary to define what is meant by "information." Joseph Becker's paper does this. Furthermore, he shows how information can be looked upon as a national resource that is never depleted by use. In fact, he emphasizes that usage increases its worth while at the same time adding to the well-being of people and the nation.

Usage, in turn, raises some vital questions that are dealt with in Alan R. Benenfeld's paper. Who should provide the informa-

tion, who should know about the existence of the many different kinds of information (where it is kept and how to get at it), and who will pay for it? These are the questions that have tended to become issues. "Knowing" that the information you may need exists and how to get it is called "information literacy."

The need to determine how to pay and how much to pay for the support of libraries and information centers and for the use of information leads to Ralph E. O'Dette's paper. He discusses the impact of having or not having funds for appropriate and relevant information activities on communities, special interest groups such as doctors and chemists, and the individual citizen. To a very large degree libraries and information services depend on citizen support for their existence. Most communities have willingly supported their libraries because it is a democratic tradition that information and knowledge should be diffused among all the people.

The usual method for finding out what a library or information center has is to look through its holdings. This list is the *card catalog*, which contains in alphabetic order authors' names, titles, and the subjects one might be interested in. The Library of Congress does much of the work of describing these items (books, magazines, journals, maps, still and motion pictures, and other forms of recorded knowledge) and making this kind of "information" available to other libraries. Lenore S. Maruyama's paper gives a good picture of this enormous effort by the Library of Congress.

Where does all the material come from that is found in our libraries and information centers? From people who write out thoughts and ideas or record them by other means, such as films. These acts of creativity are encouraged by the Constitution and were recognized as having intrinsic economic value:

> The Congress shall have power . . . to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries. . . ."
>
> *U.S. Constitution, Article I, section 8*

The Copyright Law is the instrument by which the Congress protects the rights of authors. Not too long ago the interests of the author and the publisher on the one hand and the librarian

and the user on the other were clearly symbiotic. In fact, they still are, but photocopiers, computers, and telecommunications networks have strained this relationship and introduced two very severe problems.

The first of these is: who owns the material in a book, journal, magazine, or article? is there a right to copy? if so, how much? to what extent is a library or information center responsible to a user who wants a photocopy of an article? to what extent is there a responsibility to protect the proprietary rights of the author and publisher?

The other problem is a straightforward business one. How can the private sector publisher (profit and not-for-profit) continue to invest in future publications if the market is eroded by photocopying and other means?

The first problem is dealt with in Douglas E. Berninger's paper and the second in a paper by Paul Zurkowski.

In order to understand and help solve these problems, study and research are needed. Andrew A. Aines outlines the reasons why this is necessary on a national scale and the kinds of studies that might be done.

No library or information center, even in a specific subject area, can be complete nor does it need to be. Rising costs and smaller budgets have eliminated any last vestige of the idea that a complete collection for even a very specialized clientele is possible. Yet libraries and information centers are promoting "information literacy." They are building a demand that they cannot satisfy if they exist as stand-alone information resource centers. Since information is a nondepletable resource a loose system of networks has developed to permit every library to share the resources of other libraries. The concept is simple; modern technology has made it possible. However, resource sharing as a process is complex, involving cancellation, operating funds, agreements, and policy to name a few concerns. Vernon E. Palmour explains all of this in his paper.

Information as a National Resource

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It is somewhat hazardous to attempt an overall characterization of information because information is so pervasive. It is of concern to everyone and it touches all aspects of our lives. We must, however, try to define the concept so that we have a common framework for discussions at the forthcoming White House Conference on Libraries and Information Services.

Information can be defined as the messages of human experience. In this context, an information message can be seen from two perspectives—from the point of view of its content and from the point of view of its processing.

The intellectual essence of an information message is its content. Process, on the other hand, refers to the means we use to produce, publish, communicate, organize, store, retrieve, and otherwise transfer information messages. Let us examine the two perspectives, one at a time, in order to develop an understanding of the characteristics, dimensions, and implications of information.

The content of an information message can cover any subject and appear in any language. It may deal with science or the humanities, be intended for an individual or for an institution, or relate to business or government. It may appear in printed or audiovisual form. It may be stored in a filing cabinet or on a direct access computer memory. It may be transported or communicated electronically. And it may be evaluated information or unevaluated information.

We should be careful to distinguish information from knowledge. Knowledge derives from the process people use to under-

need to analyze information. A knowledgeable person is one who knows how to do substantive process of information into a pattern of thought that leads to intelligent action. Wisdom, on the other hand, is different still. A wise person is someone who applies knowledge successfully and has the ability to discern inner qualities and relationships.

National progress and innovative development cannot occur without the creative and imaginative utilization of accumulated information. Simply amassing and organizing information is not enough. The real worth of information lies in its utilization. The great discoveries and inventions of our time and the advancement of science and human welfare in general are due to the ingenious use, by many men and women, of the array of ascertained facts and accumulated data of prior work.

Information alone, be it books, journals, and technical reports, or films, microforms, and other nonprint media, or digital, analog, and video tapes, and so forth. These materials are not just produced by government agencies, private publishing companies, and professional societies, they are also processed by a host of indexing and abstracting services, repackaged and sold by hundreds of companies, and serviced by tens of thousands of libraries and data centers in the United States.

When information is viewed as the main ingredient of knowledge, its value as a national asset becomes apparent immediately. Recognition of the worth of information and of its potential power to solve national problems has prompted many countries to approach information as if it were almost a natural resource. A nation that makes the decision assumes an obligation to husband, organize, and safeguard the information it possesses as one would any important natural resource. National information resources relate in a vital way to the quality of a nation's education and scientific progress, to its competitive economic posture in world markets, and to the performance of its national economy. That is why some nations are taking steps to make more effective use of the information their country produces and acquires.

It can be said, therefore, that information is the heart of enlightenment. It illuminates. And, because it does, it has the potential of being a force for human good. In a personal sense it can help to sharpen our reason, increase our awareness, and revise our perceptions. In a national sense it can help us educate our people, accelerate our progress, and provide the source data

needed to solve complex economic, scientific, and social problems. In a worldwide sense it can serve as the collective memory of record, helping us to hand down the dynamic history of our culture from one generation to the next.

In the United States we consider information to be a strategic resource invested for the benefit of everyone. We firmly believe that information has the power, if used positively, to multiply human enjoyment and mitigate human suffering. We also believe that information knows no country and that the content of future Voyager messages about our accomplishments and achievements as [illegible] to diverse to all people.

"Information Literacy"—Awareness of and Access to Information Resources

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"May you live in interesting times" is an ancient Oriental saying. For anyone associated with the world of information—whether as author, publisher, librarian, or user—these are interesting times indeed. Today information is available in increasingly greater quantity and greater variety of form than ever before. Use of information, however, depends on "information literacy," that is, on awareness of and ability to access information resources. We are all familiar with information resources in the form of printed books and magazines and perhaps their microform counterparts, as well as with such nonprint media commonly available through libraries as phonograph records, films, and audiovisual cassettes. We also now have three newer resources: computer-stored bibliographic and numeric data bases, and community referral services.

The acceptance and growth of newer information resources, like others that have preceded them, raises questions about the traditional and future roles of libraries and information centers because the notion of "information literacy" has new associated issues: who should provide these information resources? who should have access to them? who should pay for such access?

Bibliographic data bases, often produced by abstracting and indexing services, are accessible through computer terminals that can be located in the library. Computer searching for relevant bibliographic information such as citations to magazine articles, books, and reports (and in many cases abstracts of them) can give faster and more specific results than manual searching through comparable printed indexes. Such searching

also lends itself to handling extensive or complex information problems posed by users.

Today there are hundreds of data bases that are searchable by computer as well as in print, although a growing number are accessible only by computer. While many data bases are oriented to persons working or studying in professional fields, increasing numbers of them now are oriented to the general public—to those who wish to be more informed on a topic, whether it relates to a business, school, home, or recreational need.

An example of another type of computer-based information resource, one characterized by numeric or statistical data, is the United States census. Local governments, builders, businesses, and school boards, for instance, may need custom-tailored aggregates of census data on which to base their decisions. Thousands of other numeric data bases exist which serve, among others, scientific, technical, medical, economic, agricultural, environmental, and legislative needs from the local to the national level. Such data may be accessible through information analysis centers, each devoted to a highly specific subject interest. Awareness of these resources through the library has been limited by their very specialized nature, while access has been limited because of the need for expert staff to retrieve, analyze, and/or evaluate such data.

Community referral directories or centers represent yet another new information resource for libraries. They provide references to and information about the variety of government agencies and community services that can help citizens with problems, which may range from, for example, air pollution and nutrition to voter registration and youth programs. Data bases that index these community resources are locally generated and updated.

The library traditionally serves as the locus of information in a community, and these newer information resources are, in many ways, a natural extension of that role. Many libraries across the nation are already responding to user needs and demands by providing their communities with access to one or more of these services. These resources are being used to address information problems difficult to solve by more traditional library tools, and with them libraries are continuing to provide information services in keeping with changing contemporary needs. Information is now retrieved from computerized bibliographic data bases on demand and in relation to a specific user

need, rather than being prepackaged by publishers in anticipation of need. Information is also being culled from directories to community services or from directories to specialized information centers that handle numeric data. Thus the library is playing a direct role in providing newer information resources or in referring users to more specialized centers. However, additional special education and training of librarians is necessary to increase their understanding and skills in using computer-based information resources and in dealing with the complex, even sensitive, inquiries posed by library users.

Libraries have a long and honorable tradition of providing information at no direct cost to the library user. Information is, of course, not free; it is paid for in the public sector through taxes and in the private sector through income obtained by the library's parent institution. The newer on-line bibliographic data bases (and numeric data bases, too) are expensive, however. Most libraries are unable to pay the total cost of these services from their current operating budgets. To date, most libraries offering such services have absorbed some of the staff and overhead costs involved, but have charged individual users to cover other costs, such as those for the computer-time to search these data bases. Although each user of these resources pays in proportion to his or her use, these fees go counter to tradition. Fees for library services raise the specter of an information elite: a group that can afford to pay directly for information while others must obtain information less efficiently or perhaps not at all. In an era of tight budgets, is the library obligated to provide only those services that it can offer free or should it provide other needed services by recovering some costs through user fees?

The emergence of newer information resources raises questions about the traditional and future roles of libraries and information centers and how they can serve changing user needs. These roles cannot be considered in isolation from many other aspects: information as a national resource, the cost of information, the base for library support, and user fees for service. We seek to resolve these issues so that library users may be better informed in these interesting times.

Costs and Funding of Libraries and Information Centers

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When national attention is officially focused on an issue, whether health, welfare, education, defense, or something else, two major concerns are almost always present if not dominant. These concerns may be explicitly stated, or involved citizens may simply infer their existence. One concern is for program content, the other is for money. Discussions about libraries and information centers are not exceptions to this pattern.

It is virtually certain that everyone who participates in the NCLIS-sponsored state conferences and the White House Conference on Libraries and Information Services has thought of libraries and information centers in terms of functions or money. In this article I look at money.

My purpose is not to discuss an appropriate budget for NCLIS or the financial needs of libraries, but to argue that a larger span at information functions are affected by the use of public funds and taxes. Money issues are real and significant to all segments of society, whether they are involved with the generation, dissemination, availability, use, or some other aspect of information.

How is an economically or socially disadvantaged child to become usefully informed in relation to his or her needs and wants? How is a teacher to learn of new findings from educational research that bear on the classroom problem he or she has just confronted for the first time? How does the biochemist who has just discovered a peculiar cell-division phenomenon make

the results known to all who might usefully react to it—in cancer research or plant breeding, for instance? Can computers be used to improve medical or psychiatric diagnosis? How can we find out whether they would?

Could the public elect better representatives at all levels of government and express itself more effectively on public issues if there were in use some way to interrelate television, radio, newspapers, and the telephone? How do those in positions of responsibility make sound national and local policy affecting choices between alternative forms of transportation using alternative energy sources that create different impacts on the environment?

Every one of these questions implies an information activity. Some impinge on libraries and their holdings and services; some concern library users. Some reflect on information transfer systems, techniques, and facilities that may or may not exist to help experts tell what they know to those who can benefit from being told. Some of those questions cannot be answered because we do not know enough about the theory and practice of how people communicate.

But the issue here is money. No information function is created, flourishes, or dies without cost. Where does the money come from? Where does it go? Where *should* it come from (and how much) and where *should* it go (and how much)?

Behind each of these questions is a special interest that undoubtedly deserves, and could make effective use of, more public interest and more money. The difficulty arises from the effort to establish priorities. How can one compare the needs of a research biochemist who may have a clue to saving thousands of lives with the needs of a disadvantaged child whose life is priceless? Or needs of the classroom teacher with those of the government official forming policies affecting energy, ecology, and transportation?

We must not stop special pleading for special interests. Progress is the product of enthusiasts. The most critical question is whether we can maintain sensitivity to other, possibly conflicting needs while striving to satisfy our own.

When we are dealing with money the answer can be stark and devastating. The costs of information are high; they are unlikely to decrease. Sources of money are finite; needs are not. A national network, however "network" is defined or constituted, must have nodes and connections. The nodes may be book-

mobiles or cathode ray tube terminals, or both; the connections may be improved roads or satellites, or both. The realities of the cost of information demand careful, objective thinking about how many bookmobiles on how many roads balance how many terminals speaking through how many satellites. We must pay for both but cannot afford all we want or need of either.

The Library of Congress and Its Nationwide Cataloging Support Services

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In his *Report of the Library of Congress* for the fiscal year 1900/01, Herbert Putnam said:

> The Library is beginning a distribution of copies of these (printed catalog) cards . . . to enable other libraries to secure the benefit of its expert work in cataloguing and in printing cards for books acquired by them as well as by it, and to secure this benefit at a cost which, while a full reimbursement to the Government, is to the subscribing library but a fraction of the cost of doing the entire work independently . . . and the service which they involve is so obviously appropriate a service for the National Library of the United States, that I communicate the project in this report as the most significant of our undertakings of this first year of the new century.

By making Library of Congress cataloging available to other libraries in this country and abroad, Herbert Putnam initiated a program that has had a tremendous effect on library services and librarianship during this century. Exactly what is this cataloging process and what is its impact?

The process of cataloging involves describing an item (e.g., a book, periodical, map, motion picture, music score, or sound recording) in terms of its bibliographic and physical attributes as well as its subject matter so that a user can find it. The catalog record for a book contains information transcribed primarily

from the title page and introductory matter to indicate the author(s), title, publisher, place of publication, date of publication, and so forth. The subject of the book is indicated by the use of descriptive terms or subject headings and numeric classification schemes (the ones most commonly used in American libraries are the Library of Congress classification system and the Dewey decimal classification system).

Every year, for its own collections, the Library of Congress produces catalog records for approximately 250,000 items published in 50 major languages and 250 minor ones. Through a subscription service, it makes available these records in different formats, not only as printed cards but also in the form of book catalogs, magnetic tapes, and microform publications, and in the future with computer-to-computer transmission. Whether purchased directly from the Library of Congress or indirectly through a third party such as a commercial vendor or a regional library service center, LC's cataloging support services are used by virtually all libraries in this country, from large academic research libraries to special libraries in business, industry, and government to the smallest public or school libraries.

Over the years the Library of Congress has also acquired the expertise to compile and maintain the many specialized tools needed by libraries to catalog materials in a uniform way. These standardized rules and lists ensure a degree of consistency and uniformity both in LC's own work and also in the cataloging performed by other libraries. Two specific services in this area, the compilation of the Dewey decimal classification schedules and the assignment of Dewey numbers to LC printed cards, are provided solely for the use of other libraries, since the Library of Congress does not use the Dewey classification scheme for its own collections.

Another aspect of the Library's cataloging services is its Cataloging in Publication (CIP) program which results in having partial cataloging information prepared by LC catalogers and printed on the back of a book's title page. This cataloging information is derived from data provided by publishers before the book is published, generally at the galley proof stage, and consists of elements that must be determined by professional catalogers. For libraries that do not purchase LC cataloging products, for small libraries, and for private collections that do not need complete cataloging information the availability of CIP data in the book itself has been of considerable value. Since CIP

data are distributed on magnetic tape through the Library's cataloging subscription services, the nation's libraries and vendors to libraries also have the benefit of this prepublication information for acquisitions purposes.

Although the Library catalogs approximately 250,000 titles a year, this figure does not represent the total publishing output either in this country or in the world for which cataloging copy may be desired by other libraries. For this reason, the Library embarked on a cooperative project in 1956 with about 1100 libraries in the United States and Canada. These libraries agreed to send to the Library of Congress a copy of their latest cataloging records for monographic materials. Selected libraries were asked to send copies of all their new records while the majority were requested to submit records for specialized categories or materials. Over 2 million cataloging reports are received each year from these libraries.

Of these 2 million records, about 120,000 represent new titles for which cataloging copy was not available through the Library of Congress or other libraries. These new records contributed by outside libraries are added to the 250,000 records cataloged at LC to create the *National Union Catalog (NUC)*, which is published monthly by the Library of Congress with quarterly, annual, and quinquennial cumulations. The remaining 1.88 million outside library reports, which duplicate either LC cataloging or cataloging contributed by another outside library, are used to create a massive location file that users can consult to find the nearest library owning a desired volume. This file is published as the *Register of Additional Locations (RAL)* as a supplement to the *NUC*. The *NUC*, therefore, is the most comprehensive source for cataloging data of works of research value held by libraries in North America, and together with the *RAL*, whose automated file contains over 14 million locations for 1.94 million titles, it is the largest bibliographic tool used in interlibrary loan. Similar projects exist for other forms of materials, though on a smaller scale.

The justification used by Putnam in 1901 to begin a card distribution service to assist the cataloging processes of other libraries is still valid today, and during the last decade the Library of Congress has added a new dimension to its distribution services to take advantage of the new technologies. The Library's machine-readable cataloging (MARC) project has provided subscribers with cataloging data on magnetic tape

since 1969. This service has given users large numbers of catalog records (now totaling over 950,000) in machine-readable form from which a wide variety of products can be derived on their own computers. In 1976 the Library began producing microform editions of two major bibliographic tools; the machine-readable data were processed by a computer-output-microfilm (COM) device, and the resulting products were issued in large cumulations not feasible with the printed editions. These COM products give the users one place in which to search instead of several and can be generated at a fraction of the cost for an identical printed edition. Also in 1976, the Library began experimenting with computer-to-computer transmission of bibliographic records to take advantage of the telecommunications technology. In these ways the Library of Congress is serving one of its important constituencies, the nation's libraries, working with them to attain a comprehensive, efficient, nation-wide program for library and information services.

There is an extraordinary need for information and information systems to help solve source problems--examples: preserving the environment, reclaiming cities from urban blight, managing our energy resources, upgrading transportation systems, and equalizing job and educational opportunities. Considerable research is needed to extract valuable information from the world's information resources that can be applied to the solution of these problems. Research is needed to develop better methods of locating and combining information and data from many sources--science and technology, arts and humanities, economics, laws and legislation, health science sociology, demographic, and others. This is of high priority because most information systems originally designed to serve a specific group of users are not readibly usable in solving broad social and public problems.

As the world becomes a "global village," modern communications erase national boundaries and provide for almost instantaneous transmission of news and information. The establishment of national and international information networks--one example is EURONET, the European Information Network--will require investment in research that will efficiently and effectively link the information, data processing, and communications systems. This kind of research will be unique. The scale will be international; the complexity of the task immense. These will require multinational agreements.

These are only examples – many more can be provided – of the type of research that will be required from information scientists in the future. As we pass over the threshold of the industrial to the information society, it is obvious that information scientists will be called upon to play a more aggressive role. Their contribution in the next century will be recognized by society; their achievements may be legendary if the challenge is accepted and they succeed.

Proprietary Rights Versus the Public's Need for Information and Data Resources Stored in Various Media

DOUGLAS E. BERNINGER, Vice-President

Berner and Company
Washington, D.C.

The real property in a library is easily recognized, just as it is in a bookstore or at a newsstand, but the intangible ideas, thoughts, and concepts in a library are more important to our society. It is the intellectual property of libraries that people need to build powers of reasoning, master the industrial arts, and find amusement and pleasure; the intellectual property is used in both the most earnest endeavor playful of pursuits. This notion of intangible, intellectual property is not a new one, but it helps explain something important about modern libraries and library services. Let us take a look at this concept of property and how it affects future library programs.

While libraries do not own the system of inventiveness and creativity that results in the expression of new ideas, opinions, and thought, they provide access to that system. Similarly, libraries do not produce the books, movies, or journals that contain these expressions. Except for occasional gifts from generous patrons, libraries have to buy their property from publishers. To put it more accurately, libraries *buy access to the results of society's inventiveness and creativity* by purchasing the tangible items. They pay for the books, magazines, or films in order to receive the information they contain.

Libraries let other people use their property. They open their doors and shelves to the public, lend and circulate their material to readers, and share their collections with other libraries. Through these actions, libraries seek the same goals as publishers

to serve the public interest by widely distributing new ideas and concepts.

Libraries and publishers use obviously different methods. Libraries serve the public interest by lending and sharing the ideas embodied in their costly collections; publishers do it by packaging ideas and by manufacturing and selling those packages. Both methods are vital, and society's purposes will be served if both methods turn out well.

Until about two decades ago, libraries and publishers were succeeding. Then technology started changing things by making it easier to photocopy the printed page, to publish in space-saving microforms, and to put data and information in electronic forms for computers. While the technologies have allowed libraries to offer new and useful services, they have hindered the ability of publishers to keep track of what has happened to their information packages. The use of this technology began to upset the delicately balanced economic relationship between libraries and publishers and thus to disturb the system on which our society had been relying for developing intellectual property and giving access to new ideas and thoughts. Today serious questions are being raised about how libraries, information technology, and property rights fit into our future system of free and wide expression.

The conflict between copyright and free access illustrates some of the problems. A legal function of copyright is to penalize the worst kinds of plagiarism and piracy. It is generally perceived as a way by giving the author an opportunity to deal with the publisher and to distribute the idea in books, journals, films, and other physical packages that become the library's stock in trade. In this sense, copyright is a stimulus for inventive ideas and expressions as well as a reward to writers. Through self-executing and nondiscriminatory means it provides an incentive for identifying, promoting, and exchanging good ideas.

One can predict what would happen if property rights, such as copyright, and financial returns to the creators were not to figure strongly in future library services. Very simply, without these, libraries would undermine the system by which information has traditionally been developed in our society. The duplicating of copyrighted works illustrates what is involved here. If these are systematically photocopied without fees to the copyright owner, there is less money to cover the costs of creating the information products. Similar effects occur when several libraries

give to have a single copy of an item rather than perhaps several copies. Such library practices can have a profound effect on the economic health of publishers, reducing the resources available for the production costs of writing, editing, compiling, printing, and so on. The same economic consequences arise with new technologies when a single information product, or key, sells one rather than many. A transferred electronically among several computers in a library network. Access to data and information through these media is even more vulnerable because we have not yet established a means like copyright to deal with new technological uses of information. As a result, more such products are marketed under restrictive contractual terms.

Libraries exercise consumer power. Like other consumers, if libraries curb their buying power, they will contribute not to the cost of producing informational products. But, exercise of consumer power is normally aimed at producers of goods and services, and in this instance an overall effect will be fewer jobs and fewer purveyors of jobs, while society's information processes go limited in some other way. There are, however, no other sources of money. Using tax revenue from society at large would, however, unfairly reduce services with a greater part of our system of copyright and disseminating ideas. Another source is fee-generated collected from those who benefit directly from library services but many citizens can not and should not pay for library services. The recent passage of Proposition 13 in California, and comparable measures elsewhere, is underscoring the case for libraries.

Delegates to the White House Conference on Libraries and Information Services met to find ways to improve the usage of our libraries without pushing more and more information to libraries and, in turn, library budgets. Libraries, like information centers have a vested interest in assuring an abundant supply of books, journals, magazines, and other [illegible] to choose from. The delegates went to work carefully about any proposal that would strengthen library services and not restrict the library's access to new material in the future. Whatever the sources of revenue to the library, its future programs should support the traditional role of property rights in creating and disseminating information to libraries.

The society obviously benefits when libraries make fees or otherwise property widely available, but it is also important for us to preserve the world's finest system for promoting the free

thought and expression of poets, dramatists, scientists, and scholars and to keep that system open to all creative American men and women.

The Role of the Private Sector in Serving National Information Needs

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"Go to the library and look it up" is the standard direction given us throughout our school-age years. Underlying that directive was the recognition that libraries contain not only books and journals for pleasure and entertainment, but also the most up-to-date finding tools available for gaining access to what has been published about the known and the knowable.

To ask, in the face of that observation, what the role of the private sector should be in serving the nation's information needs would seem to be unnecessary. Obviously, all that stuff found inside libraries was produced almost exclusively by private publishing firms. Many of their names have been equated with the last word in information: "Look in Dun and Bradstreet" or "You'll find it in Standard & Poors," or "Check Wilson's Reader's Guide." Certainly, the bindings and title pages of all books—even those read for pleasure—list the names of their publishers: McGraw-Hill, John Wiley & Sons, Harcourt Brace Jovanovich, and so on.

Libraries and publishers have a good working partnership. Libraries provide publishers a degree of certainty in determining how to price a book. Certain kinds of books are known to be purchased by certain numbers of libraries. The total cost of producing the book is divided by the number of sales expected, and a price is determined. In this way, all users are charged a fair share of what publishers call their "first copy costs," that is, the cost of all steps needed to print first copy. Subsequent copies have a clearly identifiable "marginal cost," but must be

sold at a price that will pay off the total "first copy costs" and assure a profit. If you are interested in more details about the economics of book publishing, Curtis Benjamin, former president of the McGraw-Hill Book Company, has written clearly and understandably on this subject.

The private sector is very interested in the White House Conference on Libraries and Information Services because the traditional role of libraries is changing. Far from being simply repositories of privately published materials and offering services to the public on a "come in and use our collections" basis, libraries are themselves thinking in business terms and are starting to act like publishers, distributors, and retailers.

Beginning with applications of computers to certain "back room" operations such as checking in books, creating catalog cards, and keeping administrative records, libraries have started to look beyond their own confines in order to provide information services to other libraries in support of these "back room" operations and, in some cases, to substitute for the card catalogs themselves.

Photocopy machines for journal articles as well as for microform products (a microfiche containing 90 pages of material can be duplicated on a simple machine for less than 15 cents for the entire 90 pages) are converting libraries from service organizations to "republishers" of that book or journals. Instead of granting one person at a time the right to use a given book or journal through the lending program, libraries allow several people to use it simultaneously by means of photocopies. Declining subscriptions result, and publishers are finding they must raise prices to recover their rising first copy costs.

Many libraries are installing computer terminals as well, giving library patrons or "on-line" access to large collections of *machine-readable data bases of reference citations or computerized card catalogs.* Martha Williams of the University of Illinois, Urbana, has identified more than 300 such data bases, containing citations to more than 80 million documents. By searching these data bases, one person can conduct, in an hour or two on the computer, searches that used to involve several weeks of manual literature searching.

A major issue facing the library and information communities is whether libraries should charge patrons for these more sophisticated and costly services. On the one hand, the user has benefited from the tradeoff between the time required to do the

manual search and the money needed to pay for the computer time and the use of the data base. On the other hand, library services underlying the manual search have traditionally been free or paid for by the state. In addition, if the users pay, how much do they pay? Will libraries continue to be able to service people who cannot pay? Does requiring payment mean denying equal access?

What will the effect be on private firms that offer on-line search services if the library subsidizes its patrons by not fully accounting for all costs? Will the information access system of the country as a whole benefit, or will commercial services be eliminated, thus reducing access exclusively to what is available at a library?

Complicating the future of the library further is the emergence of "full-text on-line retrieval." What we have been talking about above has been on-line access to abstracts and indexes. However, many publishers today rely on computer composition in the book and journal production part of their business. They are, as a result, creating machine-readable records of the full text of these books and journal articles. For example, Dow Jones News/Retrieval and Mead Data Central's LEXIS, a legal information system, are currently marketing access to full-text materials. More and more of what is published in inkprint will also be accessible on line for full text retrieval. Will the library provide these on-line services as well?

The library will always remain a place for people to go to read books and magazines for pleasure. But its function as a source of information is changing rapidly. With more and more workers in the information age becoming not only information-literate but also information-dependent, and with such workers having access to on-line computer terminals at their job sites, will the school directive remain "Go to the library and look it up" or will new directives be needed?

Benefits of Information Science

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The need for the support of a strong national program for information science research has never been greater. An examination of these reasons is in order.

The United States is rapidly achieving the status of a post-industrial society, which features a shift from an industrial to a service society. Here the knowledge of information sector plays a leading role as measured by the number of persons devoted to information pursuits and the slice of the gross national product defined as information goods and services.

To achieve an orderly transition from a service-oriented society considerable research is necessary. This research would concern service to different elements in the population, healthy cooperation and competition within the information sector, now economic indicators and markets, and the impact of these changes on society.

Proliferation of new information and data continues, fueled by the growth of information programs and information producers and information technologies. Research is needed to keep information flowing and to make it available, so that it can be used.

Research is also needed on how man relates to and works with the new computer-based systems. We also need research that enables different information communities public and private participation in the development of new systems. It is the kind of research that seeks to focus on the needs of users, on the way they use information, and on the most appropriate form in which to get to the users.

Policies to Coordinate Information Resources

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The United States economy is shifting from a product to a service orientation, with information playing a key role. At the same time, responding to demands for services by library information centers creates special problems. The growth in the number of useful materials far exceeds the ability of these centers to buy them. No single library and information center can possibly provide every type of information alone from its own resources. Therefore, one approach is an agreement to coordinate the sharing of information resources. Without coordination there will be unnecessary and costly duplication, as well as a serious lack of resources in many instances.

What kinds of policies are needed at the local, state, regional, and national levels to bring about the coordination of our nation's information resources and expertise? The most pressing issue is for coordinated development of information systems or networks at all levels. Coordination of resource sharing (labor, materials, and money) at these levels requires planning and funding.

A plan for a nationwide network of libraries and information centers has been prepared by the National Commission on Libraries and Information Science. Most of the parts of a nationwide network exist today, but are not linked together in a useful manner. This linking is difficult because no federal agency has the authority and responsibility for turning the current set of individual libraries (and in some cases, existing groups of cooperating libraries and information centers) into a coordinated cooperative network. Another aspect of this issue is the question

of whether this authority should be at the local, state, or regional level.

A second issue that requires attention is that of funding the coordination of information resources and expertise. There exists today little agreement on the separate amounts from local, state, and federal funds needed to support information services. Current funding patterns should be examined. In addition to the governmental funding pattern, an even broader issue is the role of the *private sector* in a coordinated nationwide information network.

A number of regional (multistate) networks of libraries and information centers are now evolving. These networks are and will be seeking ways to be linked together to improve services. Computer and telecommunications technologies provide the means for these linkages. As individual centers become able to communicate rapidly with other centers, the role of the regional networks may change. For the near future, however, certain services such as delivery of materials will be best carried out on a regional basis.

There exists a very uneven development of library and information services at the state level. Some states have implemented successful statewide programs, whereas others have done virtually nothing at the state level. Policies are needed at the state and federal levels to promote local development to ensure *fairness* in sharing the burdens of a nationwide problem and opportunity.

In summary, if we are to assemble an effective coordinated approach to handling our information resources and expertise, we need policies at the local, state, and national levels that consider the following issues:

1. Whether to establish (*a*) an entity in the federal government with authority and means for implementing the programs needed to bring about a nationwide coordinated information network or (*b*) a national policy that is implemented through funding at the local level.
2. The appropriate ratio of funding among state and national authorities for the network.
3. The requirements at the regional (multistate) level for bringing about an effective nationwide network.
4. Developing library and information programs at the state level that will contribute to the nationwide program.